United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE

Seney National Wildlife Refuge
1674 Refuge Entrance Rd.
Seney, MI 49883

Summary Report of 2004 Glossy Buckthorn (*Rhamnus frangula*) Management Efforts

Background: During the spring of 2003, the Michigan Department of Natural Resources (DNR) approached Seney Refuge staff concerning a cooperative invasive plant management project that would occur on both Refuge and State-owned lands along Highway M-77 (Schoolcraft County, Michigan). The project would involve attempts to manage glossy buckthorn (*Rhamnus frangula*) and reduce the spread of the species from these sites. Based upon the preliminary results of 2003, both parties agreed that it was worthwhile to continue this cooperative project the following year. This report, therefore, is a brief summary of buckthorn management activities for 2004. The reader is encouraged to review also the white paper entitled "*An Assessment of Glossy Buckthorn (*Rhamnus frangula*) Treatment Methods: A Summary of 2004 Yearly Accomplishments*" by E. Richards and R. G. Corace, III (Seney NWR files) which outlines a cooperative research and assessment project involving individuals from Seney NWR and Michigan Technological University.

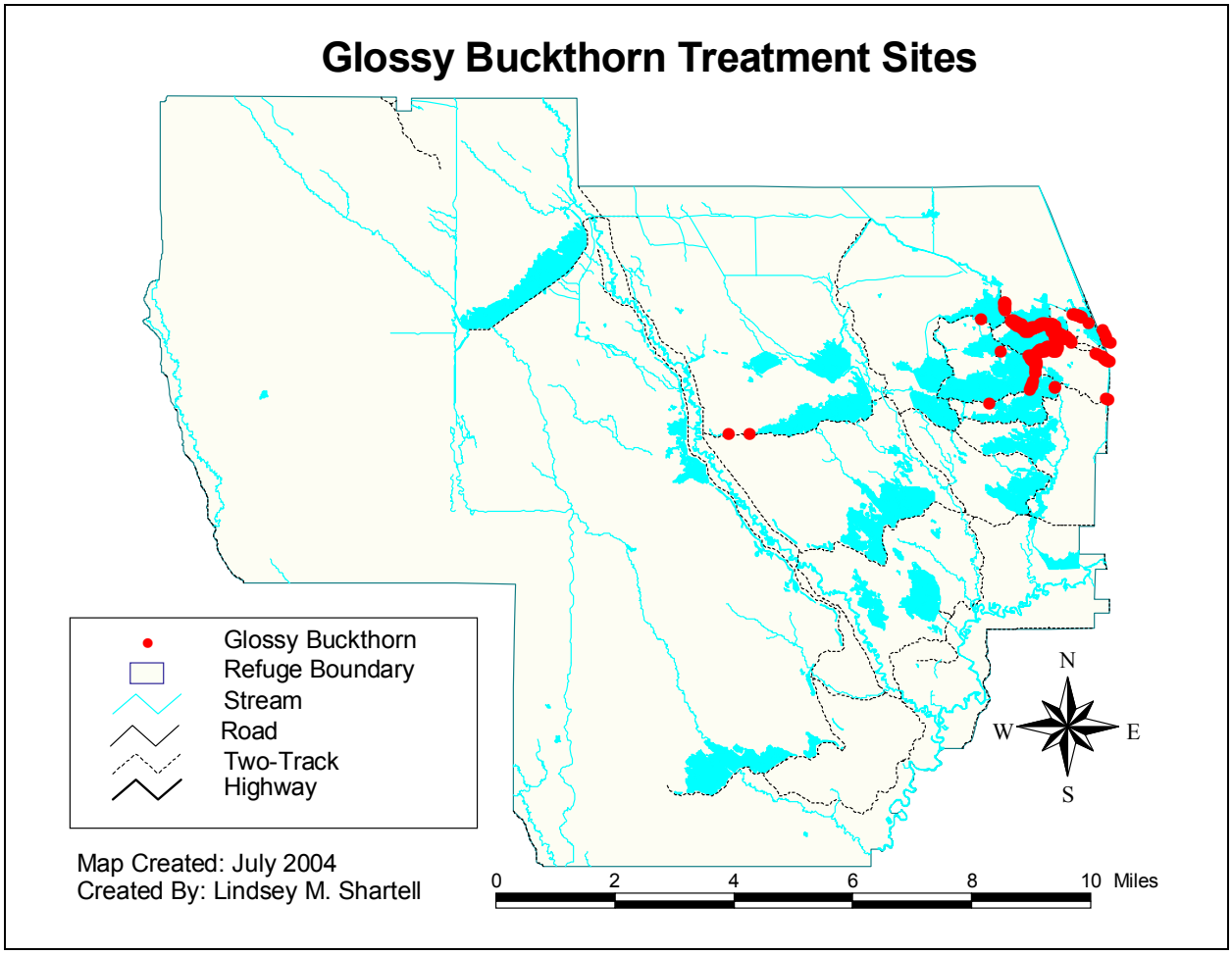
Methods: As was done in 2003, the State funded 1) a prison crew that consisted of up to eight prisoners and a guard and 2) chainsaws and associated equipment. The Refuge agreed to provide an individual State-certified for the application of pesticides and the appropriate wetland-approved herbicide (and associated equipment).

The primary method of treatment was stump application of glyphosate with a sponge applicator within five minutes of cutting by chainsaw. A dye color was added to the 20% solutions to mark the stumps treated. This technique was based on the experience of *The Nature Conservancy* in southern Michigan. A 20% solution of glyphosate was used in stump applications; glyphosate was used due to its low toxicity and persistence in the environment. On the Refuge, foliar applications of 5% glyphosate solution were used to kill seedlings and smaller stems. Where other invasive exotics (e.g., multiflora rose, *Rosa multiflora*; tartarian honeysuckle, *Lonicera tatarica*) intermingled with buckthorn, these species were also treated.

Results: During the period 6 June — 31 August 2004, a total of 145.25 Refuge staff hours were spent cutting and applying herbicide to buckthorn and associated invasive exotics and another approximately 100 Refuge staff hours were spent assessing the effectiveness of such treatments.

Treatments took place on days when rain was not in the forecast. In total, treatment occurred over approximately 20 acres on which glossy buckthorn was either dominant or co-dominant (Fig. 1). Approximately 16,413 oz. of diluted glyphosate was applied in total. Approximately 98.5% of this amount consisted of 5% glyphosate solution compared to 1.5% of 20% glyphosate solution.

Figure 1. Glossy buckthorn (*Rhamnus frangula*) treatment sites, 2004.



This Year and Next (Challenges and Opportunities): The Refuge staff considers the cooperative buckthorn control program in 2004 an overall success. At this point, there is "no light at the end of the tunnel," but we did make progress. The Refuge staff looks forward to year three of a cooperative effort between the Fish and Wildlife Service and the Michigan Department of Natural Resources to manage an invasive plant that threatens the biodiversity of both our lands. However, if the cooperative buckthorn program continues, the following should be done in 2005:

1. **Hire two (2) Biological Technicians.** Management is limited by manpower, not equipment. Two Refuge staff members, dedicated to invasive plant management, could work quite effectively with the prison crew provided by the State. On a daily basis, one technician would apply 20% glyphosate to those stems to be cut in 2005 and the other would spray 5% solution on seedling and stump sprouts arising from areas treated in 2004 and prior.

2. **Map the distribution of buckthorn in the vicinity of the Refuge.** More extensive mapping efforts are needed to provide insight into management actions (Table 1).

3. **Continue to support applied research.** The cooperative venture between Michigan Technological University and Seney NWR needs to be supported. Only through

relatively long-term monitoring and assessment will insights into the effectiveness of different treatments be elucidated. More could also be done in identifying the localized niche requirements of this species and its impact on wetland shrub communities.

Table 1. Possible future sites for removal of glossy buckthorn at Seney National Wildlife Refuge. The compiled table lists five sites along Michigan Highway 77 between North Entry Road and the town of Seney that have substantial amounts of buckthorn present.

Marker Number and Lat/Long	Distance and Direction from North Entry Rd.	Priority	Accessibility	Area and Plant Description
Mrk 2 N46° 18’ 56.7” W085° 56’ 51.9”	~ 2.2 miles north	Medium	Muddy ditch, but fairly easy to cross	Plant diameter: < 0.0254 m - ~ 0.03 m; Open area, both marsh and dry, buckthorn scattered
Mrk 3 N46° 18’ 45.18” W085° 56’ 45.72”	~ 2 miles north	High	Can cross board over portion of ditch, easy	Plant diameter: < 0.0254 m - ~ 0.05 m; High concentration of buckthorn with a high quantity of seedlings present
Mrk 4 N46° 18’ 8.04” W085° 56’ 24”	~ 0.9 miles north	High	Very easy, over wooden bridge	Plant diameter: < 0.0254 m - ~ 0.04 m; Buckthorn mixed with thick stands of alder, many seedlings present
Mrk 5 N46° 17’ 58.02” W085° 56’ 17.46”	~ 0.6 miles north	High	Difficult, can cross fallen pine	Plant diameter: < 0.0254 m - ~ 0.04 m; Buckthorn found along ditch edge and into dryer areas
Mrk 6 N46° 17.1’ 68.00” W085° 55’ 44.36”	South side of intersection (~ 0.05 miles) in marsh	High	Easy, through very shallow marsh	Plant diameter: < 0.0254 m - ~0.05 m; Plants in marsh area within fairly dense alder stands and shrubs